

TWO SPECIES OF GALATHEID CRUSTACEANS
(DECAPODA: ANOMURA) NEW TO FLORIDA,
MUNIDA SPINIFRONS HENDERSON, AND
MUNIDOPSIS KUCKI, NEW SPECIES

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Abstract. — Two species of galatheid crustaceans are reported for the first time from off Florida. *Munida spinifrons* was known previously only from *Challenger* sta 113A in Brazilian waters. Extensive description of the holotype of that species is provided, and its affinities to *M. pusilla* are discussed. *Munidopsis kucki*, new species, is closely related to *M. sharreri*. Their relationships are discussed based upon an examination of the holotype of *M. sharreri*.

Personnel at the Florida Department of Natural Resources, Bureau of Marine Research, in conjunction with the National Marine Fisheries Service, have been collecting selected macroinvertebrates in depths of 9 to about 550 meters off the east coast of Florida since 1983, as part of the Southeast Area Mapping and Assessment Program (SEAMAP). Among numerous specimens representing over 250 species of decapod crustaceans found to date were four unusual specimens of small galatheid anomurans. Three of these specimens seemed to be *Munida spinifrons* Henderson, 1885, known previously only by the type specimen from Fernando de Noronha, Brazil (Henderson 1885, 1888). We could not identify the specimens with certainty, however, because of the brevity of Henderson's species accounts; therefore, the holotype was borrowed (by KB) from the British Museum (Natural History) (BMNH). Examination of that specimen confirmed that the specimens from off Florida are *M. spinifrons*. Some characters of *M. spinifrons* suggest that it is very close to *M. pusilla* Benedict, 1902. Their relationships are discussed based on examination (by KB) of syntypes of *M. pusilla* and examination (by DKC) of other material from off eastern Florida.

The fourth specimen from SEAMAP

samples strongly resembled *Munidopsis sharreri* (A. Milne Edwards, 1880) from off St. Croix, Virgin Islands. Comparison of our specimen with the holotype of that species revealed that the Floridian specimen is a distinct species, described below.

Specimens are deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM), and the Florida Department of Natural Resources, Marine Invertebrate Collection, St. Petersburg (FSBC I).

Munida spinifrons Henderson, 1885

Fig. 1

Munida spinifrons Henderson, 1885:412;
1888:144, pl. 15, figs. 1, 1a, 1b.

Material. — *Challenger* sta 113A, Fernando de Noronha, 3°47'00"S, 32°24'30"W, 7–25 fm (13–46 m), volcanic sand and gravel: holotype, ♀ (BMNH 1888:33). — *Delaware II* cruise 83-05, sta 147, about 52.5 nmi E of St. Augustine, St. Johns County, Florida, 29°50'N, 80°15'–16'W, 49–50 fm (90–91 m), rock rubble, 23.2°C, coll. W. Lyons, D. Camp, & J. Quinn, Jr., 27 Apr 1983, 1806–1821 hr: 1 ♂ (USNM 234230). — *Delaware II* cruise 84-05, sta 091, about 52 nmi E of Jacksonville Beach, Duval County, Florida, 30°20.2'N, 80°23.9'W, 20–22 fm (36–40 m),

Arca zebra reef, 25.9°C, coll. W. Lyons, D. Camp, J. Quinn, Jr. et al., 22 May 1984, 2318–2333 hr: 2 ♀ (1 ovigerous) (FSBC I 32355).

Description of holotype.—Carapace longer than wide, greatest width equaling length measured in midline between base of anterolateral spine and posterior margin of carapace. Dorsal ridges and cervical groove distinct. Gastric region convex; epigastric region with 6 spines in 3 pairs, median pair largest, directly behind supraocular spines; lateral protogastric spine [=parahepatic spine of Zariquiey Alvarez (1952)] on each side; anterior branchial region with tiny spine directly behind midlength of anterior bifurcation of cervical groove. No other spines on dorsal surface of carapace. Lateral margin oblique; anterolateral spine sharp, curved somewhat inward, followed by 6 spines: 1 in front of, and 5 behind cervical groove.

Rostrum markedly curved dorsad, laterally armed with 4 distinct and 2 tiny spines, dorsally provided with rounded ridge, length about $\frac{3}{4}$ of postrostral carapace length. Supraocular spines subparallel, close to rostrum, about $\frac{1}{6}$ of rostral length and falling short of end of eyestalk.

Second abdominal tergum with 3 transverse ridges, anterior ridge with 2 tiny spines.

Eyes dilated, somewhat depressed, setae short.

Basal segment of antennule bearing well-developed mesial terminal spine twice as long as ventrolateral terminal one; 2 lateral spines, distal one somewhat longer than ventrolateral terminal one. Antennal peduncle composed of 4 segments, first segment with distomesial spine only, second segment with distolateral spine, third segment unarmed.

Merus of third maxilliped with 4 small, subequal, mesial marginal spines and distinct distodorsal spine. Ischium bearing distomesial and distodorsal spines, distomesial one larger. Distal 2 segments slender, carpus unarmed.

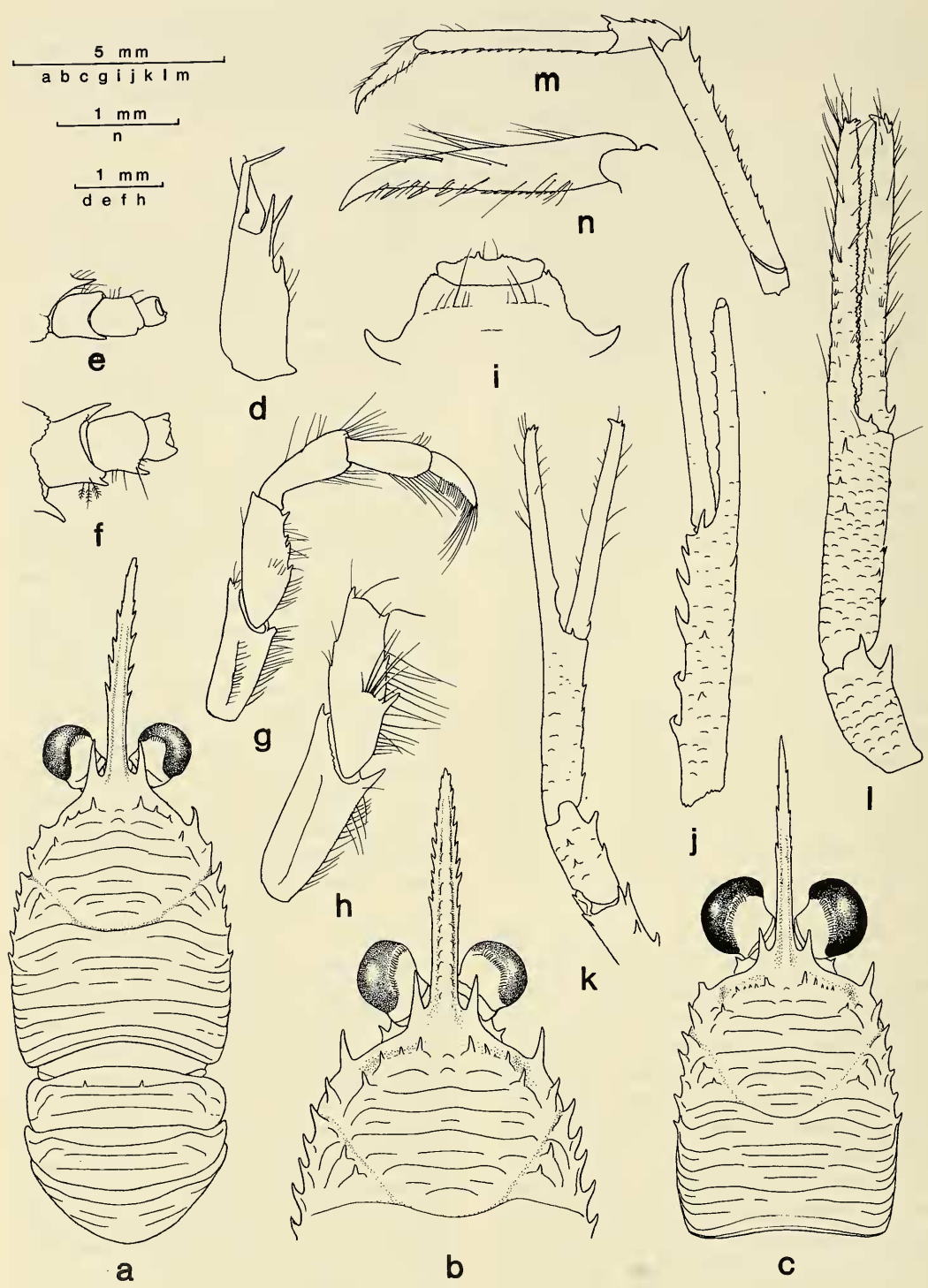
Anterior part of sternal segments as illustrated (Fig. 1i); third thoracic sternum with denticles on anterior margin; fourth thoracic sternum not triangular, anteriorly contiguous with whole posterior margin of preceding sternum.

Chelipeds dissimilar; right one larger but broken, only incomplete chela remaining; palm 5 times as long as wide, armed with 5 acute mesial marginal, 3 dorsal, 3 ventral, and 2 lateral spines; distodorsal and distoventral spines pronounced; fingers not gaping, movable finger distally curved, lacking mesial marginal spine, immovable finger distally broken, opposable margin with several distinct processes, opposing margin with smaller processes. Left cheliped slenderer and shorter than right one, subcylindrical, spination weaker; merus with 3 rows of 6 spines each including terminal one; carpus with 2 mesial marginal, 2 dorsal, and 3 ventral spines; palm about 5 times as long as wide, shorter than movable finger, mesially with small spines in 2 rows, 4 somewhat dorsal, 9 somewhat ventral; distodorsal and distoventral spines at junction with movable finger small; fingers not gaping, each ending in spine directed inward and 2 tiny spines laterally; opposable margins lacking pronounced tubercles, bearing 2 low processes on immovable finger; movable finger with distinct spine at mesial proximal margin.

Second and third pereopods slender, sparsely setose except for dactyli; meri with 10 dorsal and 1 distoventral spines, distal spines on both margins pronounced; carpi with 4 dorsal spines; propodi 10 times as long as wide, twice as long as dactyli, bearing 15 ventral spinelets on second pereopod, 17 on third pereopod; dactyli curved, without distinct serration ventrally, bearing 13 spinelets on second pereopod, 17 on third pereopod, spinelets gradually diminishing in size toward base of segment. Fourth pereopods missing.

Epipods absent from all pereopods.

Measurements.—Postrostral carapace



length of female holotype, 6.3 mm; of male, 6.6 mm; of ovigerous female, 5.8 mm; of nonovigerous female, 8.1 mm.

Remarks.—The Floridian specimens differ from each other and from the holotype in the following details: the front margin of the male is less oblique than those of the females, whereas the margins of the Floridian females are less oblique than that of the holotype female (Fig. 1a, b, c). Epigastric spines are more numerous in the male (Fig. 1c). Branchial regions in all the Floridian specimens bear two spines behind the anterior bifurcation of the cervical groove, instead of a single spine as in the holotype. The strong upward curve of the rostrum of the holotype is rather weakly expressed on the Floridian specimens. The lateral margin of the rostrum bears about nine small spines in the nonovigerous female, but only three in the male (Fig. 1b, c). The ovigerous female lacks a rostrum. Distomesial spines on the second and third segments of the antennal peduncle are distinct on the Floridian specimens, but are absent from the holotype (Fig. 1e, f). Chelipeds in the females are more granular than in the male, and the fingers are longer than the palm, as in the left cheliped of the holotype; in the male, the fingers and the palm are of equal length. The very spinose palm and lack of mesial marginal spines on the movable finger of the right cheliped of the holotype are found on only one Floridian specimen, the ovigerous female. The meri of the third maxillipeds of the Floridian specimens bear three equidistant mesial marginal spines (Fig. 1h), the proximal one being consistently larger, usually accompanying coarse, iridescent setae

on the lateral face. Spination of meri of the fourth pereopods is not exactly the same in the holotype and the Floridian specimens, if the illustration in Henderson (1888: pl. 15, fig. 1) is correctly depicted; in the Florida specimens the distodorsal spine is completely absent. Unfortunately, the fourth pereopods are no longer with the holotype. Finally, the two tiny spines on the second abdominal tergum are absent in the Floridian specimens.

Several features displayed to a greater or lesser extent by the Floridian specimens of *M. spinifrons*, including the less oblique front margin, the absence of spines on the second abdominal segment, and weaker spination of the rostrum, strongly suggest that *M. spinifrons* approaches *M. pusilla*, previously known in the western Atlantic between Cape Lookout, N.C., and Trinidad (Benedict 1902, Williams 1984). Because of the brevity of available accounts of *M. pusilla*, 19 specimens (15 males, 4 ovigerous females) were kindly selected for our examination by Austin B. Williams from more than 230 syntypes in the collection of the National Museum of Natural History (USNM 140191). Most of the features once thought to be characteristic of *M. spinifrons*, i.e., shapes of the antennular basal segments, antennae and anterior parts of sternal segments, and spination of pereopods, are shared with *M. pusilla*. Furthermore, the two species occur together off east Florida. The two females of *M. spinifrons* (FSBC I 32355) were in the same sample with 21 specimens (13 males, 7 females, 1 fragment) of *M. pusilla*. The latter specimens were also examined for this discussion.

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Fig. 1. *Munida spinifrons* Henderson, 1885; a, d, e, g, i, j, k, m, n, female holotype from *Challenger* sta 113A (BMNH 1888:33); b, f, h, l, female from *Delaware II* cruise 84-05 sta 091 (FSBC I 32355); c, male from *Delaware II* cruise 83-05 sta 147 (USNM 234230): a, Carapace and abdomen; b, Anterior half of carapace; c, Whole carapace; d, Basal segment of left antennule, ventral view; e, Antennal peduncle, left, ventral view; f, Same, right; g, Endopod of right third maxilliped; h, Same, distal three segments omitted; i, Anterior part of sternal segments; j, Cheliped, right; k, Same, left; l, Same; m, Left second pereopod; n, Dactylus of same.

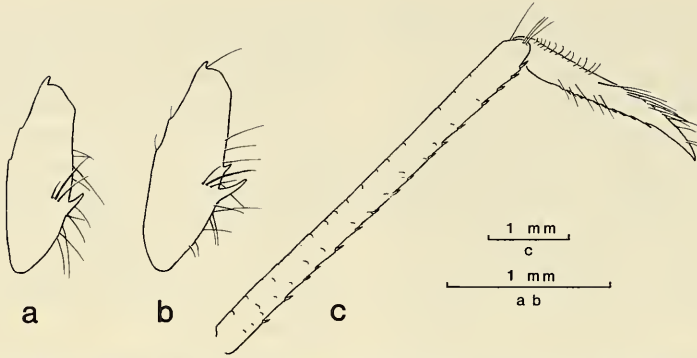


Fig. 2. *Munida pusilla* Benedict, 1902, syntypes (USNM 140191): a, Merus of third maxilliped, male, cl (postrostral carapace length) 4.5 mm; b, Same, male, cl 5.3 mm; c, Distal two segments of right second pereopod, male, cl 5.3 mm.

The two species are so morphologically similar to each other that careful examination of the following is needed for discrimination: 1) The rostrum of *M. spinifrons* is relatively longer than that of *M. pusilla*. In the intact Floridian specimens of *M. spinifrons*, the rostrum is 1.14 and 1.33 times the length of the rostrocervical distance; i.e., the distance between the level of the rostral base and the midcervical groove. In the holotype, the rostrum is 1.46 times the rostrocervical distance. By contrast, the rostral length in *M. pusilla* is far less than the rostrocervical distance (0.47–0.82, average 0.70 in the syntypes; 0.61–0.94, average 0.77 in 14 intact SEAMAP specimens). Also, lateral spination of the rostrum is barely discernible in *M. pusilla*, even under high magnification. 2) The postcervical spine on the dorsum of the carapace is absent in *M. spinifrons*, but is consistently present in *M. pusilla* (although one of the SEAMAP specimens of the latter species had the spine on one side of the carapace, but lacked the spine on the other side). 3) Meri of the third maxillipeds in both species are similar, having coarse, iridescent setae near the mesial spine at midlength. However, the three or four mesial marginal spines present in *M. spinifrons* are usually reduced in *M. pusilla* to a single large median spine and are rarely accompanied by a much

smaller spine distal to it (found on only two of the 19 syntypes and on five of the 21 east Florida specimens) (Fig. 2a, b). 4) The second to fourth pereopods are much more slender in *M. pusilla* (Fig. 2c). 5) Finally, chelipeds in the two species are similar in spination, but the fingers are as long as the palm or much longer in *M. spinifrons*, whereas they are distinctly shorter in *M. pusilla*. The finger-to-palm ratio in 15 syntypes of the latter species ranges from 0.67 to 0.93, average 0.80; in 12 intact Floridian specimens the ratio is 0.67–0.90, average 0.79. The fingers of female *M. pusilla* are also relatively longer (average ratio 0.85) than those of males (average 0.76), which is statistically a highly significant difference ($t_{0.01[10]} = 3.91^{**}$).

Munidopsis kucki, new species

Fig. 3

Type material.—*Delaware II* cruise 84-05, sta 129, about 59 nmi NE of St. Augustine Inlet seabuoy, St. Johns County, Florida, 30°10.1'N, 80°10.4'W, 124 fm (227 m), with black coral, sponges, and alcyonarians, coll. W. Lyons, D. Camp, J. Quinn, Jr. et al., 25 May 1984, 2256–2326 hr: holotype (sex indeterminate) (USNM 234229).

Description.—Carapace dorsally covered with spinules, nearly smooth, posterior por-

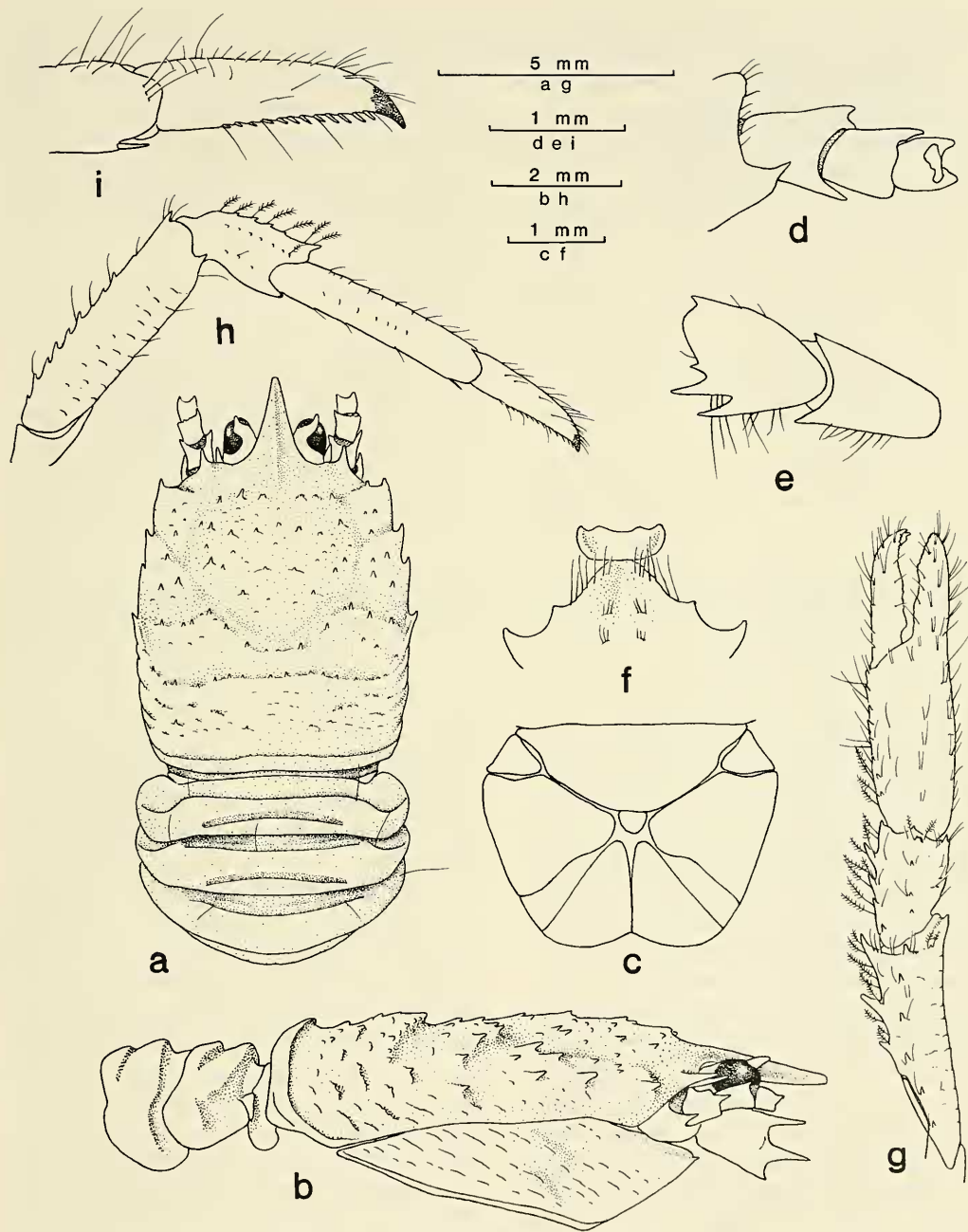


Fig. 3. *Munidopsis kucki*, new species, holotype from *Delaware II* cruise 84-05 sta 129 (USNM 234229): a, Carapace and abdomen, dorsal view; b, Same, lateral view; c, Telson; d, Left antennal peduncle; e, Merus and ischium of left third maxilliped; f, Anterior part of sternal segments; g, Right cheliped; h, Right second pereopod; i, Distal part of same.

tion sparsely covered with interrupted, reduced rugae, areas not well-delineated; gastric region convex, anterior transverse ridge of cardiac region moderately elevated. Lateral margins armed with 4 similar spines, 3 of them behind cervical groove. Front margin armed with distinct antennal spine larger than anterolateral spine. Sharp spine ventral to front margin between eyestalk and antennal peduncle. Posterior transverse ridge lacking spines, but fine denticles discernible under high magnification.

Rostrum triangular, feebly directed ventrad, dorsally carinate, 0.28 as long as postrostral carapace.

Abdomen polished, very sparsely provided with long setae; second and third segments each with 2 transverse ridges, both moderately elevated; margin of pleuron of second segment not curved dorsad. Telson divided into 8 plates.

Eyes basally relatively wide, distomesially with short, blunt eyespine; cornea wide, length more than that of peduncle.

Basal segment of antennule with 2 terminal spines, distomesially unarmed. Antennal peduncle relatively stout; first segment rounded on distomesial margin, armed with short, strong spine on distolateral margin; second segment with both distomesial and distolateral spines, distolateral larger; third segment with distomesial spine.

Ischium of third maxilliped with small distodorsal and well-developed distomesial spines; mesial ridge with 21 denticles. Merus with 3 mesial marginal spines, distalmost small, proximal 2 very strong; distodorsal margin with small, distinct spine. Anterior part of sternal segments as illustrated (Fig. 3f); third thoracic sternum relatively wide, contiguous with following sternum.

Chelipeds similar, 1.9 times as long as carapace including rostrum, somewhat massive, distally moderately depressed. Meri with 3 rows of spines: dorsal row of 6 spines, mesial row of 3 pronounced spines, ventral row of 2 (right) or 3 (left) spines;

lateral margin with single distal spine. Carpal spination as illustrated (Fig. 3g), 2 ventromesial spines invisible from above. Palms medially somewhat widened, twice as long as wide, 1.3 times as long as movable finger, mesially armed with 8 (left) or 7 (right) small spines. Fingers with sinuous opposable margins, distally fitted with few intermeshing teeth when closed.

Pereopods intact, shortened posteriorly, relatively stout, sparsely setose, and ventrally polished. Dorsal margins of meri with 9 small spines on second and third pereopods, feebly cristate without distinct spines on fourth pereopod; distoventral margin produced. Carpi dorsally with 3 or 4 denticles and 1 distinct terminal spine on second and third pereopods, none on fourth pereopod. Propodi 5 times as long as wide, ventrally with 2 terminal spinelets. Dactyli relatively stout, nearly straight excepting corneous distal claw, more setose than remaining segments, ventrally with 11-13 spinelets, length more than half that of propodus.

Epipods absent from all pereopods.

Measurements. — Postorbital carapace length, 6.3 mm; length of cheliped, 15.6 mm (right).

Remarks. — The scattered dorsal spinules and four lateral marginal spines of the carapace, the dorsally carinate rostrum, the presence of an eyespine, and the absence of epipods from all pereopods, suggest a relationship of *M. kucki* with *Munidopsis sharreri*, previously known from Blake Station 134 off St. Croix, Virgin Islands, in 454 m and off Carriacou, Windward Islands, in 298 m (A. Milne Edwards & Bouvier 1897). Comparison of the present specimen from off eastern Florida with the holotype of *M. sharreri*, now deposited in the Museum of Comparative Zoology at Harvard University (MCZ 4751), disclosed that the former specimen belonged to a new species. The holotype of *M. sharreri* is now more incomplete than when it was described originally: the left posterior part of the carapace and

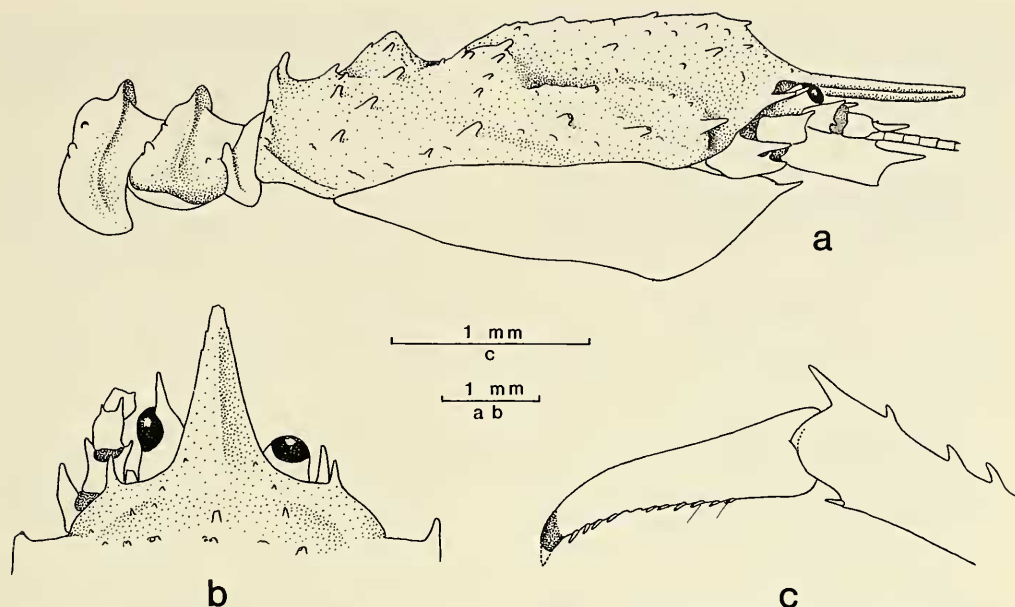


Fig. 4. *Munidopsis sharreri* (A. Milne Edwards, 1880), holotype from Blake sta 134 (MCZ 4751); a, Carapace and anterior part of abdomen, lateral view; b, Anterior part of carapace; c, Distal part of left pereopod (detached from body, possibly third pereopod).

telson are broken; some of the mouthparts are missing (the left third maxilliped and, with the exception of a mandible, all right appendages are lost, having been removed for examination and not replaced); both chelipeds are detached from the body, but the right one is broken, and only its chela remains in the jar; one detached left pereopod, possibly the third pereopod, is present, but the remaining pereopods are lost. The short right eye, lacking an eyespine, is abnormal, possibly regenerated.

The following characters of *M. sharreri* differentiate it from the Floridian new species (see Fig. 4): 1) The carapace has a strong cardiac elevation, a pronounced concavity between the anterior and posterior branchial regions near the cervical groove, and distinct spines on the posterior transverse ridge; 2) the second and third abdominal segments bear only one cristate transverse ridge, and the anterior pleuron is turned upward marginally; 3) the pterygostomial flap bears a very sharp anterior

spine; 4) the eyestalk is relatively narrow, the eyespine is more prominent and distomesial in position, and the cornea is lateral; 5) the antennal peduncle is relatively more slender, the first segment bearing a very strong distolateral spine; 6) carpi and meri of the chelipeds are subcylindrical, more spinous, and have an additional row of lateral marginal spines; 7) meri in the following pereopods (walking legs) have ventral marginal spines, propodi bear dorsal marginal spines, and dactyli are more slender and curved.

Etymology.—It is our pleasure to name this species in honor of Hans G. Kuck, who made preliminary identifications on the majority of the crustacean material collected during the SEAMAP cruises off eastern Florida.

Acknowledgments

We thank R. W. Ingle of the British Museum (Natural History); Austin B. Williams

of the National Marine Fisheries Service, Washington; and Ardis B. Johnston of the Museum of Comparative Zoology, Harvard University, for lending the type materials. Austin Williams kindly reviewed a draft of the manuscript, as did Thomas H. Perkins, James F. Quinn, Jr., and Llyn French of the Florida Department of Natural Resources.

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